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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/756,872
Filing Date: January 12, 2004
Appellant(s): SIROHEY ET AL.

Joseph M. Butscher (Reg. No. 48,326)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/28/2008 appealing from the Office action mailed 4/15/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

NEW GROUND(S) OF REJECTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim(s) 1-8 and 17-23 is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent[1] and recent Federal Circuit decisions[2] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example the method steps of virtually dissecting the anatomical structure are not tied to another statutory category such as a particular apparatus (i.e. a processor for processing the specific method steps).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 2004/0013290 A1 KRISHNAN ET AL 1-2004

Summers, R. - "Automated Polyp Detector for CT Colonography: Feasibility Study" - Radiology 2000; 216:pp. 284-290

Bartroli, A. - "Nonlinear Virtual Colon Unfolding" - IEEE - pages 411-418, Oct. 2001

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[1] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

[2] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Summers, R. - "Challenges for computer-aided diagnosis for CT colonography" - 2002 - Abdom Imaging 27:pp. 268-274

Zalis, M. – "Digital Subtraction Bowel Cleansing in CT Colonography" - 2001:pp 646-648 [this reference was not relied upon for the rejection but is used in the response to arguments Section IV-B and Section V-B for general teachings of the art at the time of the invention]

Wyatt, C.L. – "Automatic segmentation of the colon for virtual colonoscopy" – 2000:pp. 1-9 [this reference was not relied upon for the rejection but is used in the response to arguments Section IV-B and Section V-B for general teachings of the art at the time of the invention]

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 101 – [*NEW GROUND(S) OF REJECTION]**

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. **Claim(s) 1-8 and 17-23** is/are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent[3] and recent

[3] *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

Federal Circuit decisions[4] indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example the method steps of virtually dissecting the anatomical structure are not tied to another statutory category such as a particular apparatus (i.e. a processor for processing the specific method steps).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-16 and 24-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summers ("Automated Polyp Detector for CT Colonography: Feasibility Study" – Radiology 2000; 216: pp. 284-290) in view of Bartroli ("Nonlinear Virtual Colon Unfolding" - IEEE - pages 411-418, Oct. 2001, as discussed in previous Office Action), and further in view of Krishnan et al (US 2004/0013290 A1, as discussed in previous Office Action).

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[4] *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

Re Claim 9: Summers discloses a system for displaying a set of data with a virtually dissected anatomical structure / colon (see Summers, page 289, Section – Discussion, paragraph 2 ["As currently practiced ..."] and paragraph 5 ["The number of false-positives ..."], page 284, abstract ["An abdominal computed tomographic scan ..."], Figure 1), said system comprising a computation unit / shape-based polyp detector for computing display index values / shape and curvature features corresponding to object shapes / polyps, folds, false-positives, etc. in said first set of data / 3D colon structure (see page 286, paragraph 2 ["Additional, more restrictive criteria ..."], Figure 3a-c, the 3D colon structure using the shape and curvature criterion is considered and different geometric shapes are noted into a 3D data set representing different fundamental shape features by color encoding as shown in Figs. 3b); an assignment unit / color encoding for assigning display attributes / color to said display index values / 3D shape and curvature features (see page 286, paragraph 4 ["Transverse CT scans through ..."], lines 12-15, Figure 3b, the 3D colon structure using the shape and curvature criterion is considered and different geometric shapes are noted into a 3D data set representing different fundamental shape features by color encoding as shown in Figs. 3b); a mapping unit / surface unfolding for distance mapping from a reference axis / center of colon pipe said display index values / 3D shape and curvature features from the first set of data / 3D colon structure to a third set of data / 2D polyp detected images (see Figs. 3b and 1b, the 3D color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2D visual display as shown in Fig. 1b, although Summer doesn't

specifically disclose that the surface unfolded image is a 2D image it is well known in the art at the time the invention was made to have the unfolded image be 2D because unfolding is accomplished using distance mapping from the center of the colon pipe as is discussed in Bartroli [see Bartroli, abstract, right side of Fig. 1]).

However, Summers fails to disclose a virtual dissection unit for creating a virtual dissection of the anatomical structure by mapping a first set of data to a second set of data wherein the second set of data corresponds to the virtual dissection and an overlay unit for organizing said third set of data for display with the virtually dissected anatomical structure.

Bartroli discloses a virtual dissection unit / nonlinear virtual colon unfolding (see Bartroli, title) for creating a virtual dissection / virtual colon unfolding of the anatomical structure / colon structure or tubular organ (see Bartroli, page 418, last sentence in Section – Conclusion and Future Work) by mapping a first set of data / 3D volume colon structure data to a second set of data / 2D unfolded map (see Bartroli, abstract and Section – Conclusion and Future Work) wherein the second set of data corresponds to the virtual dissection.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Summer's device using Bartroli's teachings by attaching the 2D virtual dissection unit for the overlaying unit in order to provide a different visualization technique to further enhance the polyp detection (see Bartroli, abstract).

However, Summer as modified by Bartroli, still fails to disclose or fairly suggest an overlay unit for organizing said third set of data for display with the virtually dissected anatomical structure.

Krishnan discloses an overlay unit / fusion (220) for organizing said third set of data for display with the virtually dissected anatomical structure (see Krishnan, Fig. 2, paragraph [0006], lines 1-3, a fusion combiner combines two 2D data sets to create an enhanced view for a user diagnosis, therefore using the teachings of Summer and Bartroli, Bartroli's 2D unfolded map [representing the virtual dissection] is combined with Summer's 2D detected polyp image [representing the third set of data]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Summer's device, as modified by Bartroli, using Krishnan's teachings by attaching the overlay unit to further enhance the diagnosis and allow a user to view more useful information (see Krishnan, paragraph [0006], lines 1-3).

Re Claim 10: Summer further discloses an anatomical structure is the colon (see Summers, page 289, Section – Discussion, paragraph 2 ["As currently practiced ..."] and paragraph 5 ["The number of false-positives ..."], page 284, abstract ["An abdominal computed tomographic scan ..."], Figure 3).

Re Claim 11: Summer further discloses the display attribute is color / color bar (see Figure 3b, the color encoded image identifies the shape and curvature features).

Re Claim 12: Summer further discloses highlighting unit / coloring unit within the polyp detection for highlighting / coloring select display index values / only parts of colon meeting both primary and restrictive shape and curvature features according to user input / program operator (see Figs. 3c and 4c, the primary and restrictive shape and curvature features are colored or highlighted red-to-orange which are selected by the program operator or user).

Re Claim 13: Summer further discloses highlighted / coloring select said display index values / only parts of colon meeting both primary and restrictive shape and curvature features are shape data (see Summers, page 289, Section – Discussion, paragraph 2 ["As currently practiced ..."] and paragraph 5 ["The number of false-positives ..."], page 284, abstract ["An abdominal computed tomographic scan ..."], page 286, paragraph 2 ["Additional, more restrictive criteria ..."], page 286, paragraph 4 ["Transverse CT scans through ..."], lines 12-15).

Re Claims 14-15 respectively: Summer further discloses highlighted / coloring select display values / false-positives are fluid data and contrast enhanced fecal matter data (Although the current Summers article doesn't specifically disclose that the false-positives which are also highlighted in Fig. 3b are fluid data and contrast enhanced fecal matter data, a corresponding Summers article ["Challenges for computer-aided diagnosis for CT colonography" – 2002 - Abdom Imaging 27: pp. 268-274] clearly

discloses distinguishing fecal matter and fluid [see Summers "Challenges for computer ...", page 268, paragraph 6 {"Radiologists can recognize a number of polyp mimics ..."}, page 271, paragraph 1 {"An important objective of CTC interpretation is ..."}]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have such a feature where the select display values or false-positives are fluid data and contrast enhanced fecal matter data because these data's have there own specific shape, curvedness, and texture values and ranges which a detection could possibly be made for.).

Re Claim 16: Bartroli further discloses first set (the first set is represented by Summer's 3D colon structure as discussed above) of data is three-dimensional and said second / 2D unfolded map (see Bartroli, abstract and Section – Conclusion and Future Work) and third sets (the third set is represented by Summer's 2D detected polyp image as discussed above) of data are two-dimensional.

As to claims 1-8, the claims are the corresponding method claims to claims 9-16 respectively. The discussions are addressed with regard to claims 9-16.

As to claims 24-31, the claims are the corresponding computer readable medium encoded with a computer executable program claims to claims 9-16 respectively. The discussions are addressed with regard to claims 9-16.

5. Claims 17-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summer ("Automated Polyp Detector ...") in view of Bartroli.

Re Claim 17: Summer discloses a method for viewing a virtually dissected anatomical structure / colon (see Figs. 3b and 1b, the 3D color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2D visual display as shown in Fig. 1b, although Summer doesn't specifically disclose that the surface unfolded image is a 2D image it is well known in the art at the time the invention was made to have the unfolded image be 2D because unfolding is accomplished using distance mapping from the center of the colon pipe as is discussed in Bartroli [see Bartroli, abstract, right side of Fig. 1]), said method comprising instructing by a user / program operator the display of a virtual dissection of an anatomical structure / colon (see Figs. 3a and 1a, the 3D colon image is surface unfolded to produce the 2D visual display as shown in Fig. 1a, page 289, Section – Discussion, paragraph 2 ["As currently practiced ..."] and paragraph 5 ["The number of false-positives ..."], page 284, abstract ["An abdominal computed tomographic scan ..."], page 286, paragraph 2 ["Additional, more restrictive criteria ..."], page 286, paragraph 4 ["Transverse CT scans through ..."], lines 12-15); selecting by a user / program operator various characteristics / shape and curvature criterion of the anatomical structure / colon for enhancement / coloring or highlighting (see Figs. 3b and 1b, the 3D color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2D visual display as shown in Fig. 1b, different geometric shapes are enhanced with coloring or highlighting using the shape and curvature criterion set by the program operator); and observing by a user / program operator said selected

characteristics / shape and curvature features and the virtual dissection / surface unfolded colon (the surface unfolded colon and the colored shape and curvature features are observed in a display by the program operator).

However, Summer fails to specifically disclose the surface unfolded colon is a virtual dissection anatomical structure.

Bartroli discloses that the anatomical structure is of a virtual dissected anatomical structure (see Bartroli, right side of Fig. 1, abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Summer's method using Bartroli's teachings by replacing Summer's surface unfolded anatomical colon structure with the virtual dissection structure of a colon in order to provide a different visualization technique to further enhance the polyp detection (see Bartroli, abstract).

Re Claim 18: Bartroli further discloses displaying said virtual dissection (Bartroli discloses the virtual dissection which is similar to Summers surface unfolded colon) and said selected characteristics (Summer discloses the coloring or highlighting of the shape and curvature features on the anatomical structure).

Re Claim 19: Summer further discloses an anatomical structure is the colon (see Summers, page 289, Section – Discussion, paragraph 2 ["As currently practiced ..."] and paragraph 5 ["The number of false-positives ..."], page 284, abstract ["An abdominal computed tomographic scan ..."], Figure 3).

Re Claim 20: Summer further discloses the colon has characteristics / shape and curvature features comprising cup, rut, saddle, ridge / shaped like ridges, and cap (see page 286, paragraph 2 ["Additional, more restrictive criteria ..."]). (Although Summer doesn't specifically disclose the shape and curvature features could also include cup, rut, cap, and saddle shapes, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have such a feature because a cup, rut, saddle, and cap shapes are just different types of shape and curvature features which describe different polyp and colonic wall shapes [see Yoshida {"Computer-aided diagnosis scheme for detection of polyps at CT Colonography", Radio Graphics 2002, as discussed in previous Office Action}, Fig. 10]).

Re Claims 21-22 respectively: Summer further discloses said selected characteristic for enhancement / coloring select false-positives are fluid data and contrast enhanced fecal matter data (Although the current Summers article doesn't specifically disclose that the false-positives which are also highlighted in Fig. 3b are fluid data and contrast enhanced fecal matter data, a corresponding Summers article ["Challenges for computer-aided diagnosis for CT colonography" – 2002 - Abdom Imaging 27: pp. 268-274] clearly discloses distinguishing fecal matter and fluid [see Summers "Challenges for computer ...", page 268, paragraph 6 {"Radiologists can recognize a number of polyp mimics ..."}, page 271, paragraph 1 {"An important objective of CTC interpretation is ..."}]. It would have been obvious to one of ordinary skill in the art at the time the

invention was made to have such a feature where the select display values are fluid data and contrast enhanced fecal matter data because these data's have there own specific shape, curvedness, and texture values and ranges which a detection could possibly be made for).

Re Claim 23: Summer further discloses said selected characteristics for enhancement / coloring select parts of colon meeting both primary and restrictive shape and curvature features are shape data (see Summers, page 289, Section – Discussion, paragraph 2 ["As currently practiced ..."] and paragraph 5 ["The number of false-positives ..."], page 284, abstract ["An abdominal computed tomographic scan ..."], page 286, paragraph 2 ["Additional, more restrictive criteria ..."], page 286, paragraph 4 ["Transverse CT scans through ..."], lines 12-15).

(10) Response to Argument

I. The Office Action Has Not Established That The Proposed Combination Of Summers, Bartroli And Krishnan Renders Claims 1-16 And 24-31 Unpatentable

(see Appeal Brief, pp. 9-12 respectively)

A. *The Appellant firstly argues respectively*, claim 1's [independent claims 9 and 24 recite similar limitations] limitation of "distance mapping from a reference axis said display index values from the first set of data to a third set of data" is not taught by the Examiner's interpretation that Summers ["Automated Polyp Detector for CT

Colonography" - Radiology 2000] discloses the "3D color encoded polyp image as shown in Fig. 3b is surface unfolded to produce the 2D visual display as shown in Fig. 1b" because Summers does not explicitly describe, teach or suggest that anything from the image in Figure 3b is mapped to anything in Figure 1b but rather Figure 1b of Summers is a mere hypothetical representation of a portion of a colon that is used to clearly and simply show the method of polyp detection [particularly, nothing shown in Figure 3 of Summers is mapped to Figure 1 of Summers (or vice versa), nor does Summers describe, teach or suggest as much].

B. The Examiner's response to the Appellants' first argument is that Summers is applying an automated Polyp Detection algorithm to CT Colonography image data. In doing so, Summers considers 3-Dimensional surface rendered images of the colon and using shape features color encodes the 3D images to identify curvature patterns that describe possible polyps [polyps which meet the primary and restrictive shape criteria are marked with orange colors on the 3D image data] and improve efficiency of diagnosis by directing the physician's attention to sites likely to harbor polyps [see Summers, Fig. 3 on page 286, page 289 at paragraph "As currently practiced, analysis at ..." and paragraph "Measurement of curvature is a standard image ..."]. Summers then discloses in Figure 1b a hypothetical portion of the colonic surface describing polyp detection displayed in an unfolded manner also using color indicative region labeling based on curvature shape data [when a user views the display and visually see's between two folds of a colonic surface, it is because the colonic surface is layed flat / unfolded like is shown in Figure 1b]. The Examiner

used the term unfolded to describe Figure 1b because that is the clear visualization of the unfolded colon, it is an unfolded portion as could also be similarly compared to the prior art reference Bartroli, virtual colon unfolding [see Bartroli, Figure 1, the 3D rendition of the colon image data in the left part of Bartroli's figure 1 is similar to Summer's 3D colon in Figure 3b and Bartroli's virtually dissected or unfolded 2D rendition of the CT colon image data in the right part of Bartroli's figure 1 resembles Summer's 2D unfolded colon in Figure 1b]. This argument was explored in the Examiner's rejection of claim 9 [for example] when the Examiner states that "although Summer doesn't specifically disclose that the surface unfolded image is a 2D image, it is well known in the art at the time the invention was made to have the unfolded image be 2D because unfolding is accomplished using distance mapping from the center of the colon pipe as is discussed in Bartroli [see Bartroli, abstract at lines 8-10, right side of Fig. 1]". Therefore, although Summers doesn't explicitly suggest that figure 1b is an unfolded version of figure 3b, there is motivation to lead one of ordinary skill in the art at the time the invention was made to distinguish that figure 1b is indeed an unfolded 2D rendition of figure 3b by using the teachings of Bartroli's Figure 1 which visually is the exact same type of display as of Summer's figures 1b and 3b [Bartroli's Figure 1 once again shows a 3D colon being processed to a 2D virtually unfolded colon segment using a distance map from the central path, Bartroli's Figure 7 is a cross-section view once again showing 3D colon data being processed to a 2D virtually unfolded colon data]. Therefore, the Examiner still believes that Summers teaches distance mapping / distance map from a reference

axis / center path said display index values / 3D shape and curvature features [which are represented with color in Figs 3b and 1b of Summers] from the first set of data / 3D surface rendered CT colon image data to a third set of data / unfolded 2D rendition of the color indicated polyp detected image data. The result of Summers with the general teachings of Bartroli would be completely predictable and obvious to one of ordinary skill in the art at the time the invention was made in that Summers 3D rendition of the colon in Figure 3b would be used to produce the unfolded 2D rendition of the color indicated polyp detected image data in order to improve efficiency by directing the physicians" attention to sites likely to harbor polyps in a simplified 2D fashion. The obviousness rationale advanced hereinabove is consistent with the criteria articulated in KSR *International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

For these reasons, the Examiner considers these arguments unpersuasive and maintains the previous rejection of claims 1-16 and 24-31.

II. The Office Action Has Not Established That The Proposed Combination Of Summers, And Bartroli Renders Claims 17-23 Unpatentable (see Appeal Brief, pp. 13 respectively)

A. *The Appellant firstly argues respectively* that reconsideration of the rejection of claims 17-23 for at least the reasons discussed above in Section I-A.

B. The Examiner's response to the Appellants' first argument is that the Examiner maintains the rejection for at least the same reasons as discussed above in Section I-

B. Also, claims 17-23 are much broader than the previous set of claims and the Examiner's rejection is formatted relatively different and therefore the Examiner also refers once again to the rejection of claims 17-23 in Section (9) Grounds Of Rejection for further discussions.

For these reasons, the Examiner considers these arguments unpersuasive and maintains the previous rejection of claims 17-23.

III. The Office Action Has Not Established A Prima Facie Case Of Obviousness With Respect To Claims 4, 12 And 27 (see Appeal Brief, pp. 13 respectively)

A. *The Appellant firstly argues respectively*, regarding claims 4, 12 and 27 that Summers does not teach or suggest "highlighting select said display index values according to user input".

B. The Examiner's response to the Appellants' first argument is that such a limitation is present in Summers in that the polyp detection was performed by using software where the restrictive criteria were chosen on the basis of 10-mm polyps [see Summers, page 286 at paragraph "Polyp detection was performed ..." in lines 1-2, page 286 at paragraph "Additional, more restrictive criteria were needed ..." in lines 4-7, Figures 3b and 1b show how the *color encoding or highlighting* identify various shape features which meet this shape criteria]. The software programmer [program operator] is the user that has chosen this criteria to use for the primary and restrictive shape criteria which are used by the program afterwards to apply polyp detection and

color encode or highlight [for example orange to red, yellow, etc] the detections which meet this shape criteria with color indications [see Figs. 3 and 4].

For these reasons, the Examiner considers these arguments unpersuasive and maintains the previous rejection of claims 4, 12, and 27.

IV. The Office Action Has Not Established A Prima Facie Case Of Obviousness With Respect To Claims 6, 14, 21 And 29 (see Appeal Brief, pp. 14-15 respectively).

A. *The Appellant firstly argues respectively*, regarding claims 6, 14, 21 and 29 that Summers ["Challenges for Computer-Aided Diagnosis for CT Colonography" – Abdom Imaging 2002 (this article will be referred to as "*Challenges*" in the below discussions)] does not describe, teach or suggest "wherein said highlighted select said display index values are fluid data" but merely suggests "it may be possible to subtract residual fluid or stool from CTC images or mark them so that they can be recognized [12,13]" because *Challenges* is not a functioning system but rather the challenges that such a system and the general knowledge of the art must address and overcome.

B. The Examiner's response to the Appellants' first argument is that Summers ["Automated Polyp Detector for CT Colonography" - Radiology 2000] discloses highlighting [color encoding] select said display index values [shapes which meet the criteria] as is discussed in Section III-B above but does not explicitly suggest that the highlighted values are fluid data. The Examiner relied upon the general teachings of another related Summers article on the field of diagnosis for CT colonography

(*Challenges*) to show that such highlighted values may be fluid data. *Challenges* discloses that "it may be possible to subtract residual fluid or stool from CTC images or mark them so they can be recognized [12, 13]" in order to improve efficiency of polyp diagnosis by distinguishing between polyp's and retained fluid (see *Challenges*, page 271 at paragraph "An important objective of CTC ..." in lines 5-10 and 13-18). Further, *Challenges* goes on to disclose useful techniques for identifying and eliminating voxels containing stool. Therefore, the statement of "it may be possible to subtract residual fluid or stool from CTC images or mark them so they can be recognized" is not just a mere challenge and a mere possible future application, it is a statement followed by a proposed technique for carrying out the solution to this challenge which is an enabling disclosure of the desired subject matter to one of ordinary skill in the art at the time of the invention. Also, *Challenge* in the end of that statement ["it may be possible to subtract residual fluid or stool from CTC images or mark them so they can be recognized [12, 13]"] points to two references 12-Wyatt and 13-Zalis (see *Challenges* reference list in page 274 in regards to references 12-Wyatt and 13-Zalis). Zalis discusses "digital subtraction bowel cleansing in CT colonography" and "all retained colon fluid and fecal material can be opacified and subtracted" (see Zalis, title, page 648 at left paragraph) which once again supports the fact that *Challenge* is not only stating a possible challenge in the field but also the possible solution. Wyatt discusses "automatic segmentation of the colon for virtual colonoscopy" and "automatic approach to improve lumen segmentation by digitally removing residual contrast-enhanced fluid" (see Wyatt, title, abstract at lines 9-10)

which once again supports the fact that *Challenge* is not only stating a possible challenge in the field but also the possible solution. The result of Summers teaching of highlighting select said display index values as is discussed in Section III-B above with *Challenge's* teachings that the residual fluid or stool from the image may be subtracted or marked so as to be recognized to show that the highlighted values are fluid data would be completely predictable and obvious to one of ordinary skill in the art at the time the invention was made in order to improve efficiency of polyp diagnosis by distinguishing between polyp's and retained fluid. The obviousness rationale advanced hereinabove is consistent with the criteria articulated in KSR *International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

For these reasons, the Examiner considers these arguments unpersuasive and maintains the previous rejection of claims 6, 14, 21 and 29.

V. The Office Action Has Not Established A Prima Facie Case Of Obvious With Respect To Claims 7, 15, 22 And 30 (see Appeal Brief, pp. 15-17 respectively)

A. *The Appellant firstly argues respectively*, regarding claims 7,15, 22 and 30 that the Summers ["Challenges for Computer-Aided Diagnosis for CT Colonography" – Abdom Imaging 2002 (this article will be referred to as "*Challenges*" in the below discussions)] does not describe, teach or suggest "wherein said highlighted select said display index values are contrast enhanced fecal matter data" but merely suggests "it may be possible to subtract residual fluid or stool from CTC images or mark them so that they can be recognized [12,13]" because *Challenges* is not a

functioning system but rather the challenges that such a system and the general knowledge of the art must address and overcome.

B. The Examiner's response to the Appellants' first argument is that Summers ["Automated Polyp Detector for CT Colonography" - Radiology 2000] discloses highlighting [color encoding] select said display index values [shapes which meet the criteria] as is discussed in Section III-B above but does not explicitly suggest that the highlighted values are contrast enhanced fecal matter data. The Examiner relied upon the general teachings of another related Summers article on the field of diagnosis for CT colonography (*Challenges*) to show that such highlighted values may be contrast enhanced fecal matter data. *Challenges* discloses that "it may be possible to subtract residual fluid or stool from CTC images or mark them so they can be recognized [12, 13]" in order to improve efficiency of polyp diagnosis by distinguishing between polyp's and stool or retained fluid (see *Challenges*, page 271 at paragraph "An important objective of CTC ..." in lines 5-10 and 13-18). Further, *Challenges* goes on to disclose useful techniques for identifying and eliminating voxels containing stool. Therefore, the statement of "it may be possible to subtract residual fluid or stool from CTC images or mark them so they can be recognized" is not just a mere challenge and a mere possible future application, it is a statement followed by a proposed technique for carrying out the solution to this challenge which is an enabling disclosure of the desired subject matter to one of ordinary skill in the art at the time of the invention. Also, *Challenge* in the end of that statement ["it may be possible to subtract residual fluid or stool from CTC images or mark them so they

can be recognized [12, 13]"] points to two references 12-Wyatt and 13-Zalis (see *Challenges* reference list in page 274 in regards to references 12-Wyatt and 13-Zalis). Zalis discusses "digital subtraction bowel cleansing in CT colonography" and "all retained colon fluid and fecal material can be opacified and subtracted" (see Zalis, title, page 648 at left paragraph) which once again supports the fact that *Challenge* is not only stating a possible challenge in the field but also the possible solution. Wyatt discusses "automatic segmentation of the colon for virtual colonoscopy" and "automatic approach to improve lumen segmentation by digitally removing residual contrast-enhanced fluid" (see Wyatt, title, abstract at lines 9-10) which once again supports the fact that *Challenge* is not only stating a possible challenge in the field but also the possible solution. The result of Summers teaching of highlighting select said display index values as is discussed in Section III-B above with *Challenge's* teachings that the residual fluid or stool from the image may be subtracted or marked so as to be recognized to show that the highlighted values are contrast enhanced fecal matter data would be completely predictable and obvious to one of ordinary skill in the art at the time the invention was made in order to improve efficiency of polyp diagnosis by distinguishing between polyp's and stool or retained fluid. The obviousness rationale advanced hereinabove is consistent with the criteria articulated in KSR *International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

For these reasons, the Examiner considers these arguments unpersuasive and maintains the previous rejection of claims 7, 15, 22 and 30.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section **(9)** above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be

treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

/Bernard Krasnic/ (Examiner, Art Unit 2624)

November 4, 2008

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

DIRECTOR TC 2600

Conferees:

(1) Jingge Wu (SPE)

/Jingge Wu/

Supervisory Patent Examiner, Art Unit 2624

(2) Samir A. Ahmed (SPE)

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624